

CLAIMS

1. A method comprising:

receiving a request to play compressed video data in a reverse direction;

identifying a most recent key frame received;

decoding the most recent key frame;

identifying delta frames received after the most recent key frame;

decoding the identified delta frames; and

playing the decoded delta frames in the reverse direction.

2. A method as recited in claim 1 further comprising playing the decoded key frame after playing the decoded delta frames in the reverse direction.

3. A method as recited in claim 1 further comprising:

playing the decoded key frame after playing the decoded delta frames in the reverse direction;

identifying a next most recent key frame;

decoding the next most recent key frame;

identifying a second set of delta frames received after the next most recent key frame and before the most recent key frame;

decoding the second set of delta frames; and

playing the second set of decoded delta frames in the reverse direction.

1 4. A method as recited in claim 1 wherein decoding the identified delta
2 frames includes decoding the identified delta frames in a forward playback
3 direction.

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5 5. A method as recited in claim 1 wherein decoding the identified delta
6 frames includes utilizing data contained in the most recent key frame.

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8 6. A method as recited in claim 1 wherein decoding the most recent key
9 frame includes decompressing the most recent key frame.

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11 7. A method as recited in claim 1 wherein decoding the identified delta
12 frames includes storing 1 of N identified delta frames and discarding the
13 remaining identified delta frames.

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15 8. A method as recited in claim 7 wherein N is an integer portion of a
16 result of applying a square root function to the number of delta frames associated
17 with each key frame.

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19 9. A method as recited in claim 1 further comprising deleting alternating
20 delta frames after decoding the identified delta frames.

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22 10. A method as recited in claim 1 further comprising deleting N of
23 every P frames after decoding the identified delta frames, wherein N and P are
24 integers.

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1 **11.** A method as recited in claim 1 further comprising:
2 deleting alternating rows of pixels in each decoded delta frame; and
3 deleting alternating pixels in non-deleted rows of pixels in each decoded
4 delta frame.

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6 **12.** A method as recited in claim 1 further comprising:
7 reducing an amount of data associated with each pixel in each decoded
8 delta frame; and
9 storing the reduced amount of data associated with each decoded delta
10 frame.

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12 **13.** A method as recited in claim 1 further comprising:
13 applying a lossless compression algorithm to each decoded delta frame; and
14 storing each of the compressed delta frames.

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16 **14.** A method as recited in claim 1 further comprising:
17 identifying at least one compressed audio packet associated with the
18 compressed video data;
19 decoding the compressed audio packet; and
20 playing the decoded audio packet in reverse order.

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22 **15.** A method as recited in claim 1 wherein decoding the most recent
23 key frame includes partially decoding the most recent key frame to an intermediate
24 format.
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1 **16.** A method as recited in claim 15 wherein the intermediate format is
2 used in decoding the identified delta frames.

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4 **17.** A method as recited in claim 1 wherein decoding the identified delta
5 frames includes partially decoding at least one of the identified delta frames to an
6 intermediate format.

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8 **18.** A method as recited in claim 17 wherein the intermediate format is
9 used in decoding subsequent delta frames.

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11 **19.** One or more computer-readable memories containing a computer
12 program that is executable by a processor to perform the method recited in claim
13 1.

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15 **20.** A method comprising:
16 receiving a request to play compressed video data in a reverse direction;
17 identifying a most recent key frame previously received;
18 decoding the most recent key frame;
19 identifying delta frames received subsequent to the most recent key frame;
20 decoding the identified delta frames;
21 deleting N of P delta frames, wherein N and P are integers; and
22 playing the remaining identified delta frames in the reverse direction.
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1 **21.** A method as recited in claim 20 further comprising storing the
2 identified delta frames that were not deleted.

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4 **22.** A method as recited in claim 20 further comprising playing the
5 decoded key frame after playing the remaining identified delta frames in the
6 reverse direction.

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8 **23.** A method as recited in claim 20 wherein decoding the identified
9 delta frames includes utilizing information contained in the most recent key frame.

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11 **24.** A method as recited in claim 20 wherein decoding the identified
12 delta frames includes utilizing information contained in the most recent key frame
13 and information contained in any intervening delta frames.

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15 **25.** A method as recited in claim 20 further comprising deleting
16 alternating rows of pixels in each decoded delta frame.

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18 **26.** A method as recited in claim 20 further comprising deleting
19 alternating pixels in each row of pixels in each decoded delta frame.

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21 **27.** One or more computer-readable memories containing a computer
22 program that is executable by a processor to perform the method recited in claim
23 20.

1 **28.** An apparatus comprising:
2 an audio decoder coupled to receive compressed audio data and decode the
3 compressed audio data;
4 an audio data store coupled to the audio decoder;
5 a video decoder coupled to receive compressed video data and decode the
6 compressed video data;
7 a video data store coupled to the video decoder; and
8 a reverse playback controller coupled to the audio decoder and the video
9 decoder, wherein the reverse playback controller generates decoded audio data and
10 decoded video data in a reverse direction.

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12 **29.** An apparatus as recited in claim 28 wherein the compressed video
13 data includes at least one key frame and a plurality of delta frames associated with
14 the key frame.

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16 **30.** An apparatus as recited in claim 28 wherein the reverse playback
17 controller discards alternating frames of received audio data.

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19 **31.** An apparatus as recited in claim 28 wherein the video decoder
20 deletes alternating frames of received audio data.

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22 **32.** An apparatus as recited in claim 28 wherein the reverse playback
23 controller is further coupled to receive forward playback instructions and reverse
24 playback instructions.
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1 **33.** One or more computer-readable media having stored thereon a
2 computer program that, when executed by one or more processors, causes the one
3 or more processors to:

4 receive a request to play compressed multimedia data in a reverse direction;
5 identify a most recent video key frame received in the compressed
6 multimedia data;
7 decode the most recent video key frame;
8 identify video delta frames received after the most recent video key frame;
9 decode the identified video delta frames;
10 identify at least one compressed audio packet in the compressed multimedia
11 data;
12 decode the compressed audio packet; and
13 play the decoded video delta frames and the decoded audio packet in the
14 reverse direction.

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16 **34.** One or more computer-readable media as recited in claim 33
17 wherein the audio packet is associated with at least one decoded delta frame.

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19 **35.** One or more computer-readable media as recited in claim 33
20 wherein alternating video delta frames are deleted after decoding the alternating
21 video delta frames.

1 36. One or more computer-readable media as recited in claim 33
2 wherein N of P video delta frames are deleted after decoding the video delta
3 frames, wherein N and P are integers.
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5 37. One or more computer-readable media as recited in claim 33
6 wherein the one or more processors further:

7 apply a lossless compression algorithm to each of the decoded video delta
8 frames; and

9 store each of the compressed video delta frames.
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11 38. One or more computer-readable media as recited in claim 33
12 wherein the one or more processors further store the decoded video delta frames
13 and the decoded audio packet.
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